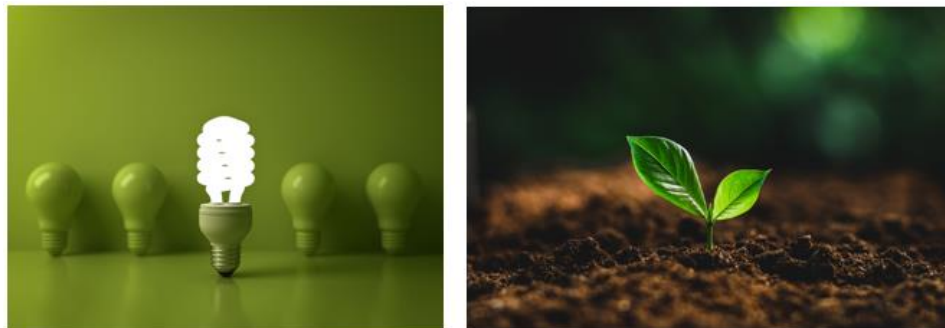




Enhancing Energy Audits: Improving Data Quality and Including Non- Energy Benefits to Promote Energy Efficiency in Industry

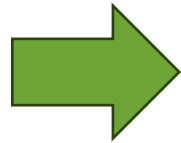
Sofia-Natalia Boemi*, Wolfgang Eichhammer,
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Introduction

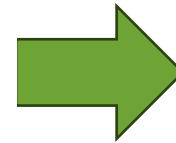


To support industries in selecting, considering, and implementing energy-saving measures (ESMs) recommended in energy audits.



ENERGY AUDIT

Strategic Approaches
For Enhanced Efficiency
And Sustainability

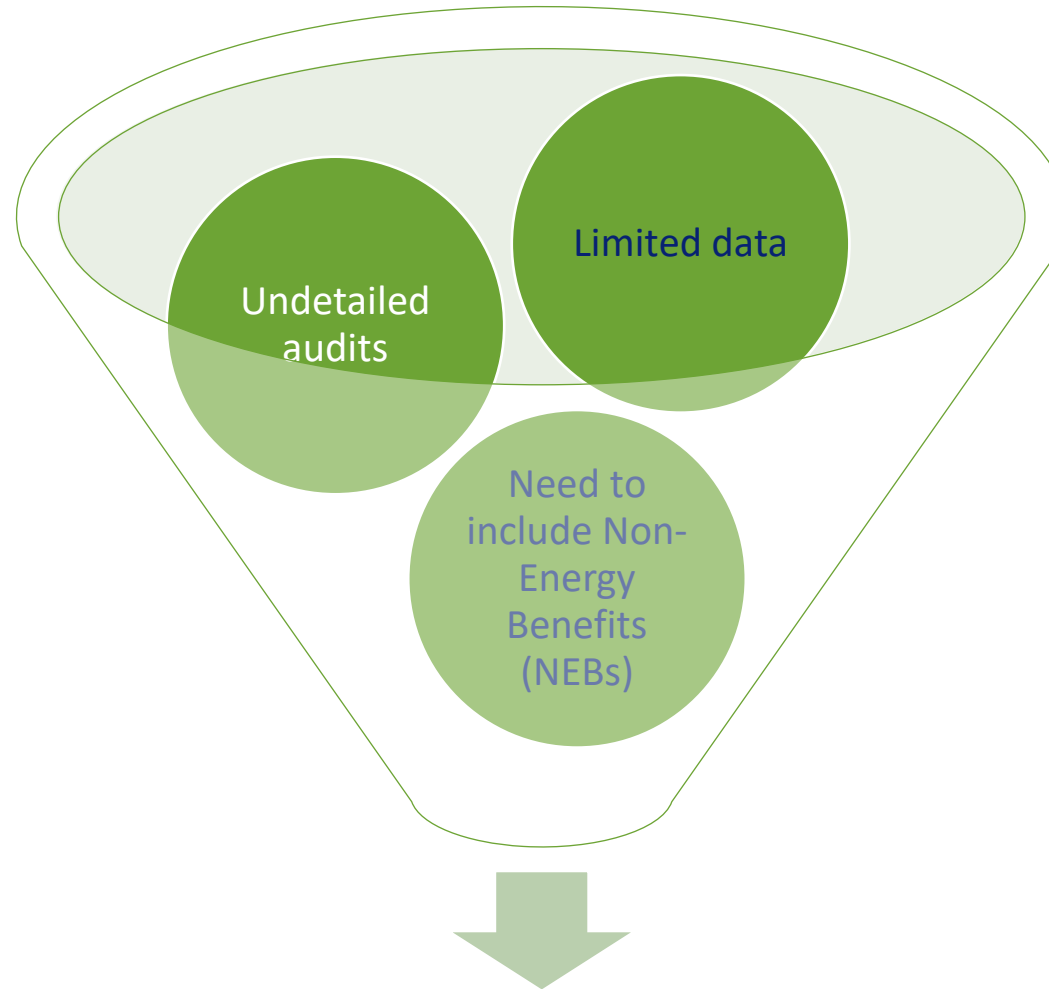


Challenge: trade-off between *detailed data collection* vs. *cost & effort*

Cost-effective? Energy audits are beneficial even when energy expenditures account for only 2% of a company's total expenses, making them valuable for non-energy-intensive companies as well

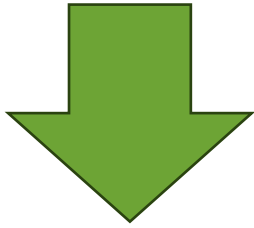
The problem

Comprehensive audits require detailed data on energy usage, equipment characteristics and operational practices, which can be time-consuming and costly.

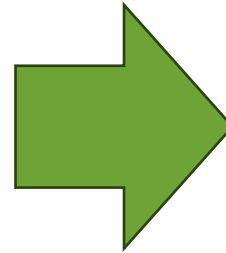


Improve energy audits

The methodological framework



How effective and well-structured should data collection be in audits to motivate investments and support policy quality?



EN 16247-1 standard (latest version EN 16247-1:2022) specifies the general requirements and methodology for conducting energy audits applicable to all organizations and types of energy use. It provides the foundational principles, auditor competencies, and a structured process for identifying energy-saving opportunities to improve energy efficiency, reduce costs, and minimize environmental impact. This standard forms the basis for other parts of the EN 16247 series, which detail sector-specific requirements for energy audits in areas like buildings, industrial processes, and transport.

The results

- Five project partner countries' national laboratories (*DE, IT, ES, EL, NL*) were established with the aim of analysing the top-management decision-making process
- Focus: medium-sized, non-energy-intensive industries

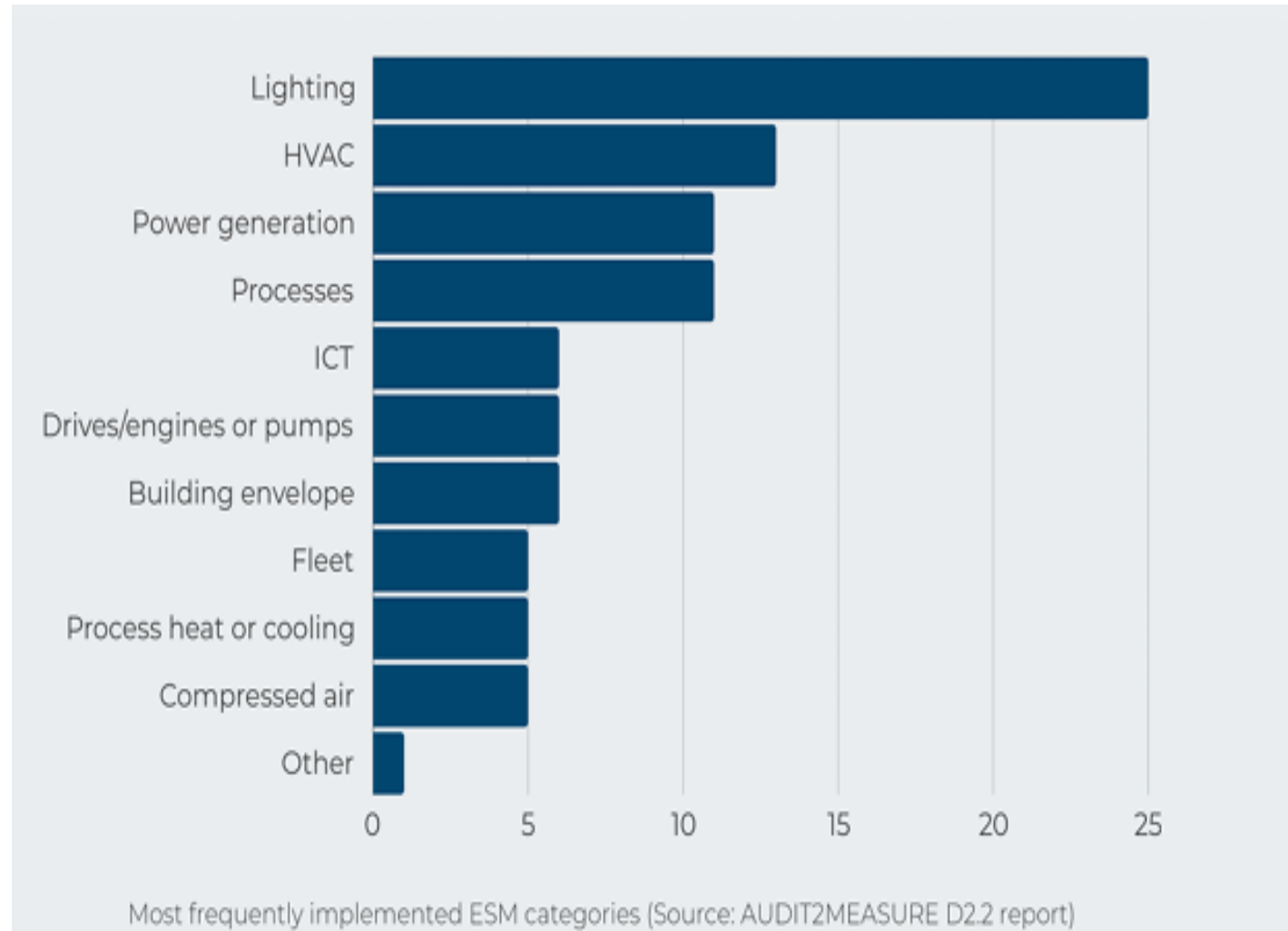


- Low-quality audits → poor data, generic recommendations
- Excessive data requests → administrative burden
- Example Italy (2024):
 - 31.4% non-compliant audits
 - 31.3% compliant only after updates
- Example Germany (2017): mixed audit quality; internal better than external

The results

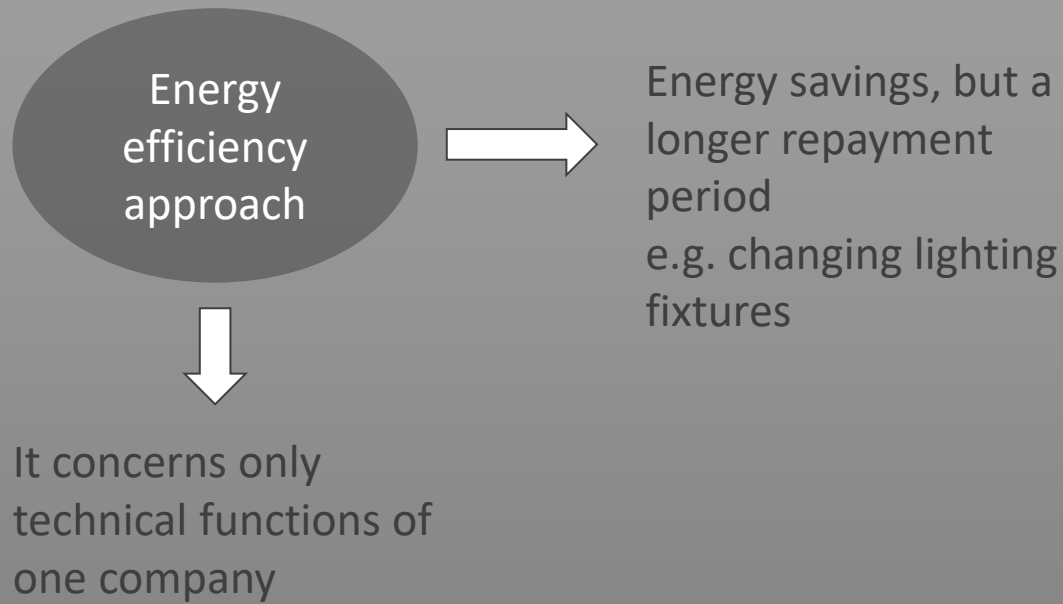
Usual Energy Efficient Solutions

A

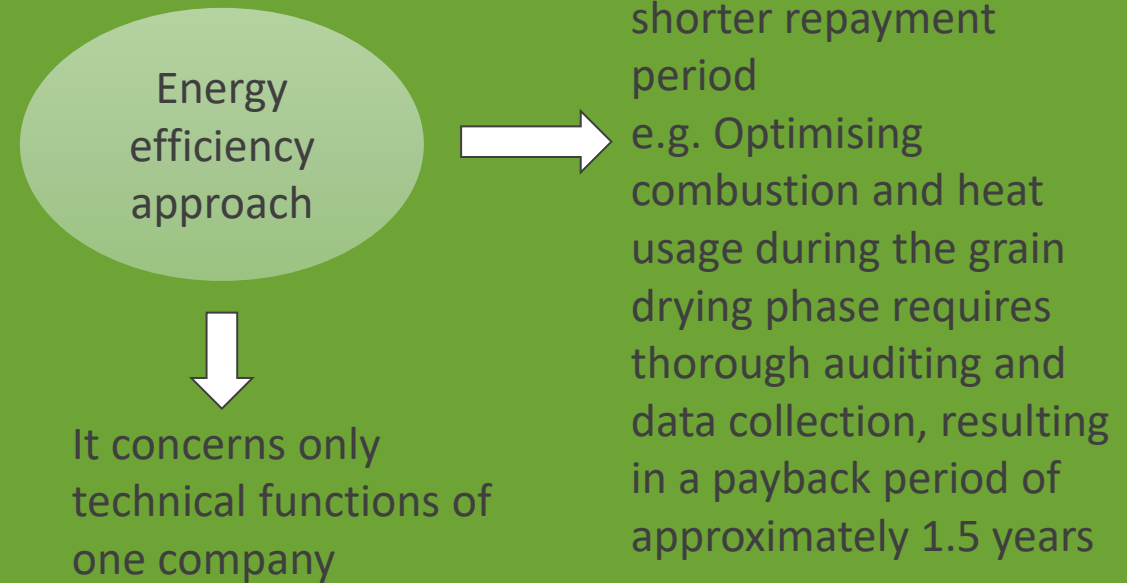


The results

The classical approach – Standardised solutions

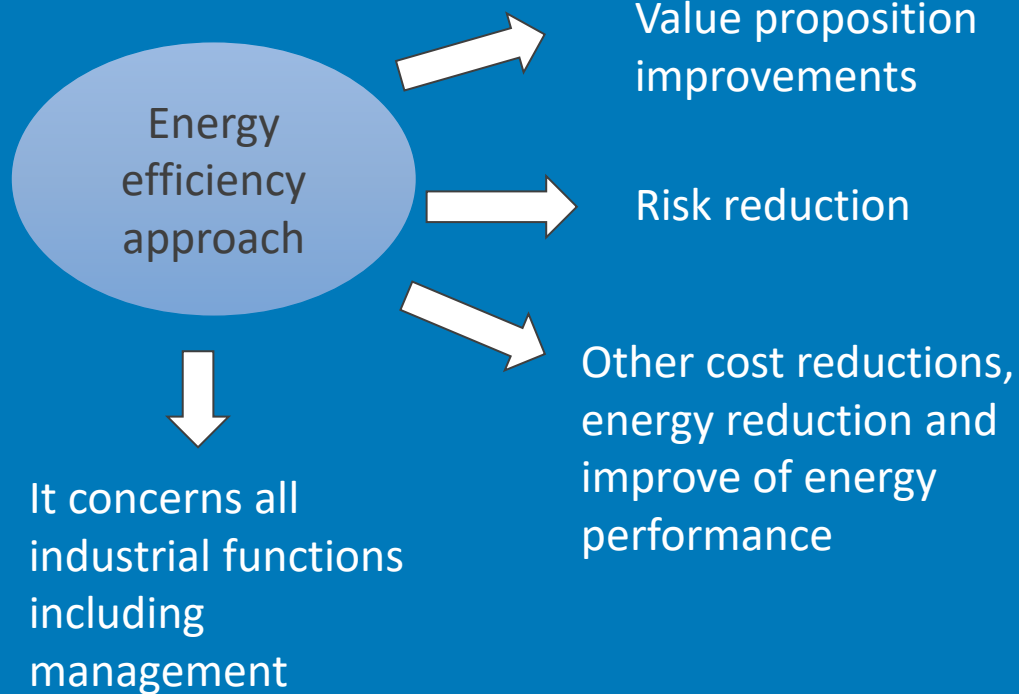


The classical approach – Customised solutions



The results

Multiple benefits approach – NEB inclusion



NEBs influence decisions: comfort, reduced noise, improved working conditions and have a shorter payback period

	NEB	Indicators (examples)
Production	- Increased productivity - Reduced production costs - Improved product quality	- More units/hour of products (unit/h) - Reduced cost per produced unit (€/unit) - Positive customer satisfaction
Operation and maintenance	- Reduced wear of equipment - Reduced cleaning requirements	- Less operation & maintenance costs (€) - Less cleaning costs (€)
Work environment/ health/safety	- Improved worker safety - Improved health and comfort conditions	- Reduced insurance costs (€) - Improved air quality (ppm)
Waste and water	- Reduced waste - Greater efficiency and control of water use, reduced water use.	- Less cost of waste disposal or transport (€) - Decreased cost of water use (€)

Conclusions

- Detailed, streamlined data collection improves:
 - Identification of inefficiencies
 - Reduction of administrative burden
 - Policy evaluation quality
- Combining efficiency with NEBs → greater adoption & profitability
- Mandatory audits + process-specific knowledge → higher impact



- Refine audit frameworks for SMEs & non-energy-intensive sectors
- Integrate NEBs systematically in audit guidelines
- Support compliance with reduced reporting burden



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Thank you!

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