



AUDIT2MEASURE

A NEW STRATEGY TO SUPPORT COMPANIES IN THE UPTAKE OF AUDITS MEASURES: THE AUDIT₂MEASURE PROJECT

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Summary

- **The AUDIT₂MEASURE project**
- **First results and key findings for the CA EDD PM:**
 - **State of the art: challenges faced by Member States**
 - **The Audit₂Action strategy**
 - **A₂M Database: data collection process**
 - **A₂M Energy Management Maturity Assessment**
 - **Capacity Building Programme: successful case studies**
 - **Policy recommendation report**
- **Conclusions and next steps**

General Information

AUDIT₂MEASURE

Leading business towards climate neutrality by speeding up the uptake of energy efficiency measures from the energy audits

Proposal ID: 101075785

- Ref. Call: LIFE-2021-CET
- Topic: **LIFE-2021-CET-AUDITS** - Uptake of energy audits recommendations for the energy transition of companies
- Type of Action: LIFE Project Grants
- Duration: 36 Months
- Start Date: **November, 1st 2022**
- Total Budget: 1,959 M€
- Coordinator: RSE

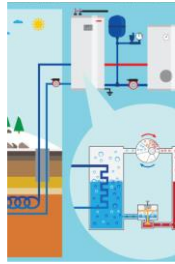
Partners involved

Audit 2 Measure Partners



Motivation and aim

Promoting the uptake of Energy Efficiency measures in Industrial sector



Cutting-edge technical solutions



Renewable energies



Digitalization and automation (ML, AI) → Industry 4.0



From waste to fuels →
Circular economy →
Industry 5.0

A. Sayeda, Al-Sayed, S. J. Zaidi; *Carbon Dioxide Chemistry, Capture and Oil recovery Book*, 2018

In order to pave the way towards a sustainable production and environmental benign integrated route



Project outline

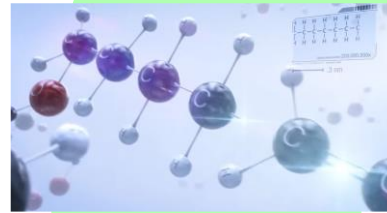
Sustainability,
replication &
exploitation



State of the art



Auditization strategy



Support to industries









Capacity building



State of the art: National Audit Systems

Key findings

- Target groups for the audit obligation differ strongly among surveyed countries.
- ISO certified EMS exempt from audits in all countries, EMAS only in Germany.
- Germany, Italy and the Netherlands have set ESM implementation obligations with varying criteria.
- Control and enforcement measures mainly on random sample basis, only the Netherlands control all audits.
- To date, only Germany and Italy have conducted national evaluations. Spain is currently carrying it out.

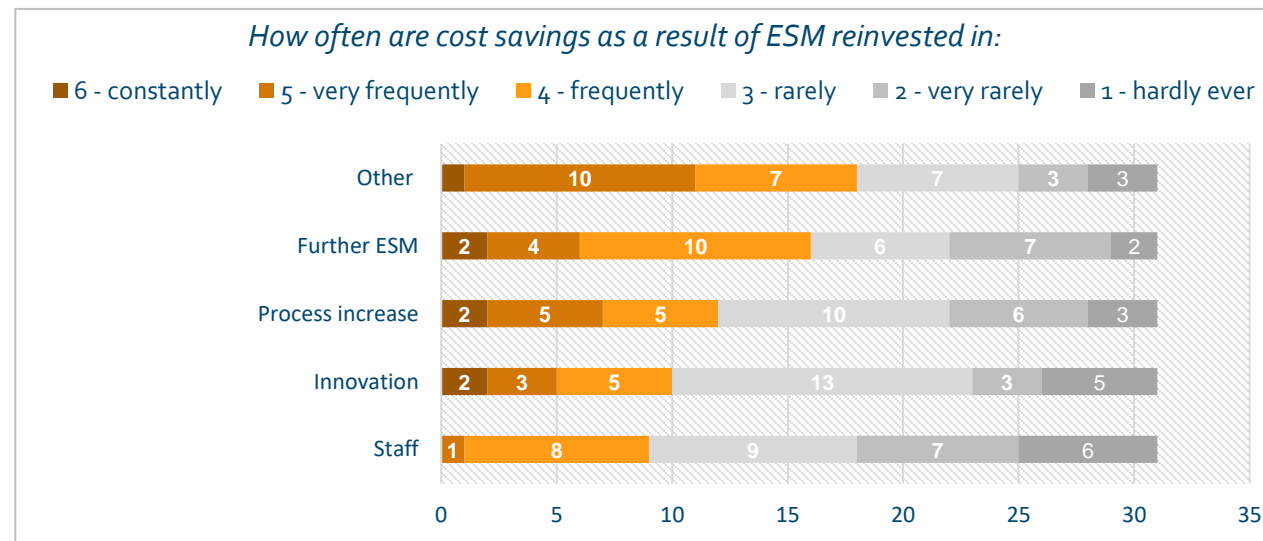
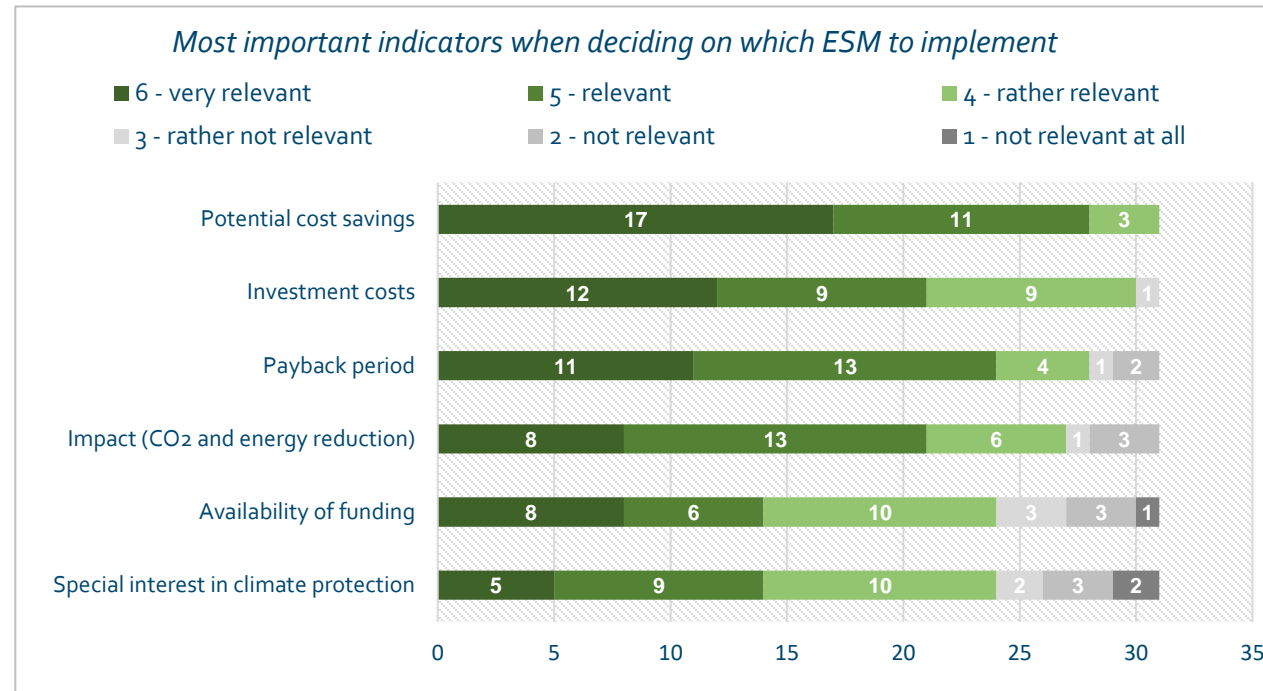
	 CZ	 DE	 GR	 IT	 ES	 NL
Energy audit obligation since	2000	2015	2015	2015	2016	2008
Criteria for audit obligation for non-SMEs (MWh/a)*	>200	>500	All	>523,5	All	>50
Criteria for audit obligation for SMEs (MWh/a)*	>5,000	-	-	>1,000	-	-
Frequency of mandatory audits (years)	4 (10)	4	4	4	4	4
Mandatory Financial metrics for ESM recommendation**	IRR, NPV	IRR, NPV	LCC	IRR, NPV	SPP	ROI
Exemption through certified Energy Management Systems	ISO	ISO, EMAS	ISO	ISO	ISO	ISO
ESM implementation obligation since	-	2022 to 2024	-	2020	-	2019
Obligation criteria for ESM implementation (MWh/a)*	-	>10,000	-	>1,000	-	>10,000
Selection criteria for mandatory ESM implementation	-	NPV > 0 in 3 years	-	1 ESM	-	ROI > 0 in 5 years
Period for mandatory ESM implementation (years)	-	1.5	-	4	-	4

Overview of parameters of national audit systems (Audit-to-Measure D2.1; results of policy review and expert questionnaires)

State of the art: decision processes of companies

Key findings

- High energy costs are a serious concern for most.
- Most surveyed companies view their climate commitment as positive and are aware of further savings potentials.
- Most surveyed companies have internal staff in charge of energy management, though only a few have a certified energy management system in place.
- ESM investment decisions are mostly made by top management, with internal energy staff and auditors playing an important informational role.

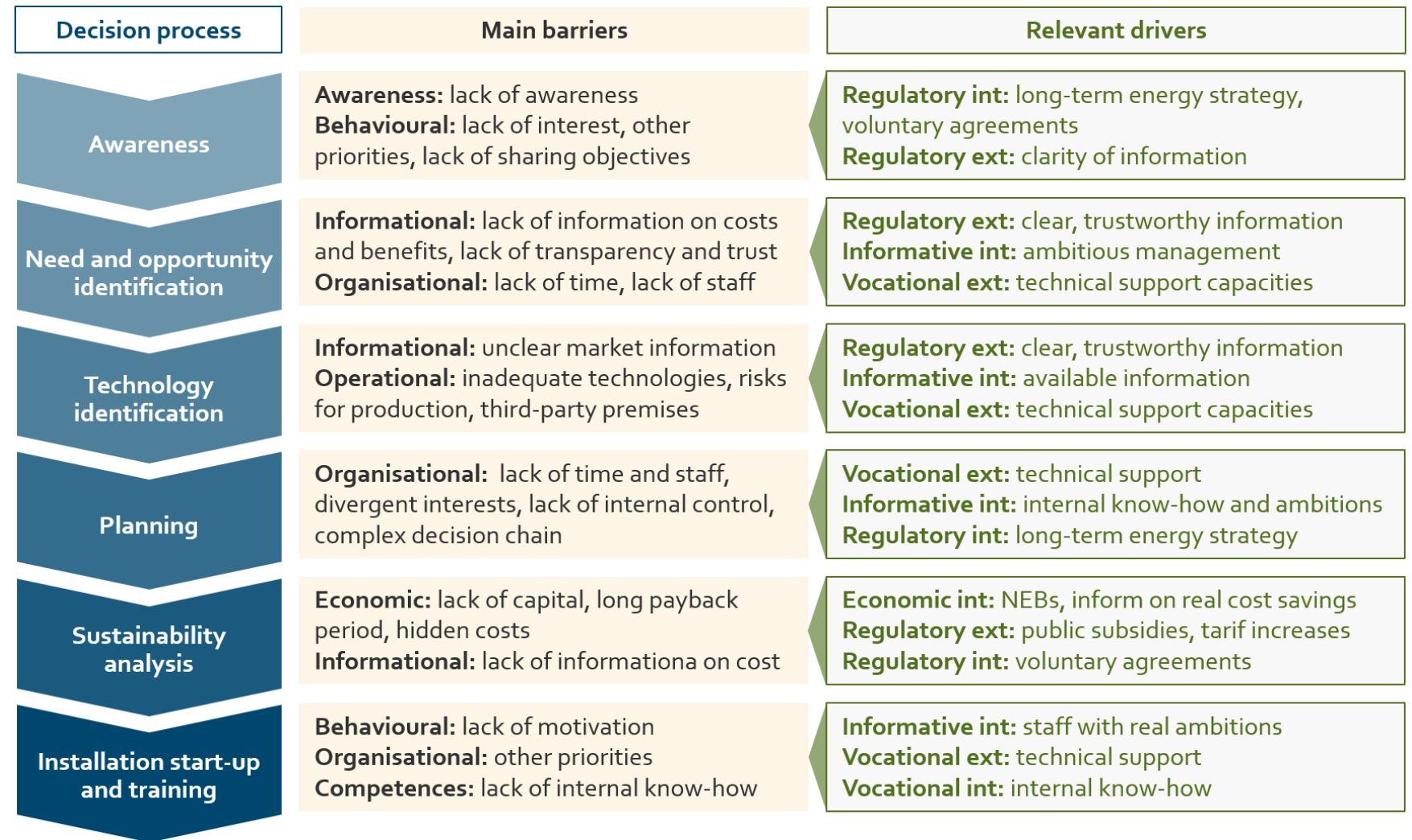


Results from a survey of 31 mid to large companies and 35 auditors from 5 countries (Audit2Measure D2.2)

State of the art: barriers and drivers to the uptake of ESM

Key findings

- More comprehensive analyses on national level is needed to better understand barriers.
- Main barriers are economic and organisational.
- Informational and competence barriers are perceived as less prominent.
- Smaller companies are affected stronger by organisational and informational barriers.
- Trainings on all management levels can increase ambitions and know-how.
- Energy Management Systems reduce informational barriers.



Overview of main barriers and relevant drivers along the decision-making process of companies (Audit-to-Measure D2.3; based on: Cagno et al. 2016, Cagno et al. 2013)

State of the art: the role of auditors

Key findings

- Surveyed companies mostly implement ESM in the areas recommended by the auditor.
- Over a third of surveyed auditors do not refer to NEBs.
- Over a third of surveyed auditors do not provide implementation guidance
- Requirements for ESM assessment metrics in audits vary strongly:

ESM economic metrics	CZ	GR	DE	IT	NL	ES
Simple Payback Period (SPP)	O	O		O		O
Return On Investment (ROI)					O	
Internal Rate Of Return (IRR)	O		O	O		R
Net Present Value (NPV)	O		O	O		R
Life Cycle Cost Analysis (LCCA)		R				

Overview of obligatory and recommended economic assessment metrics for ESM by country (Audit-to-Measure D2.1; results of policy review and expert questionnaires)

Audit2Action strategy

Key findings

→ Guidance at EU level would be useful to help companies in Member States to have an as common as possible approach to audit implementation

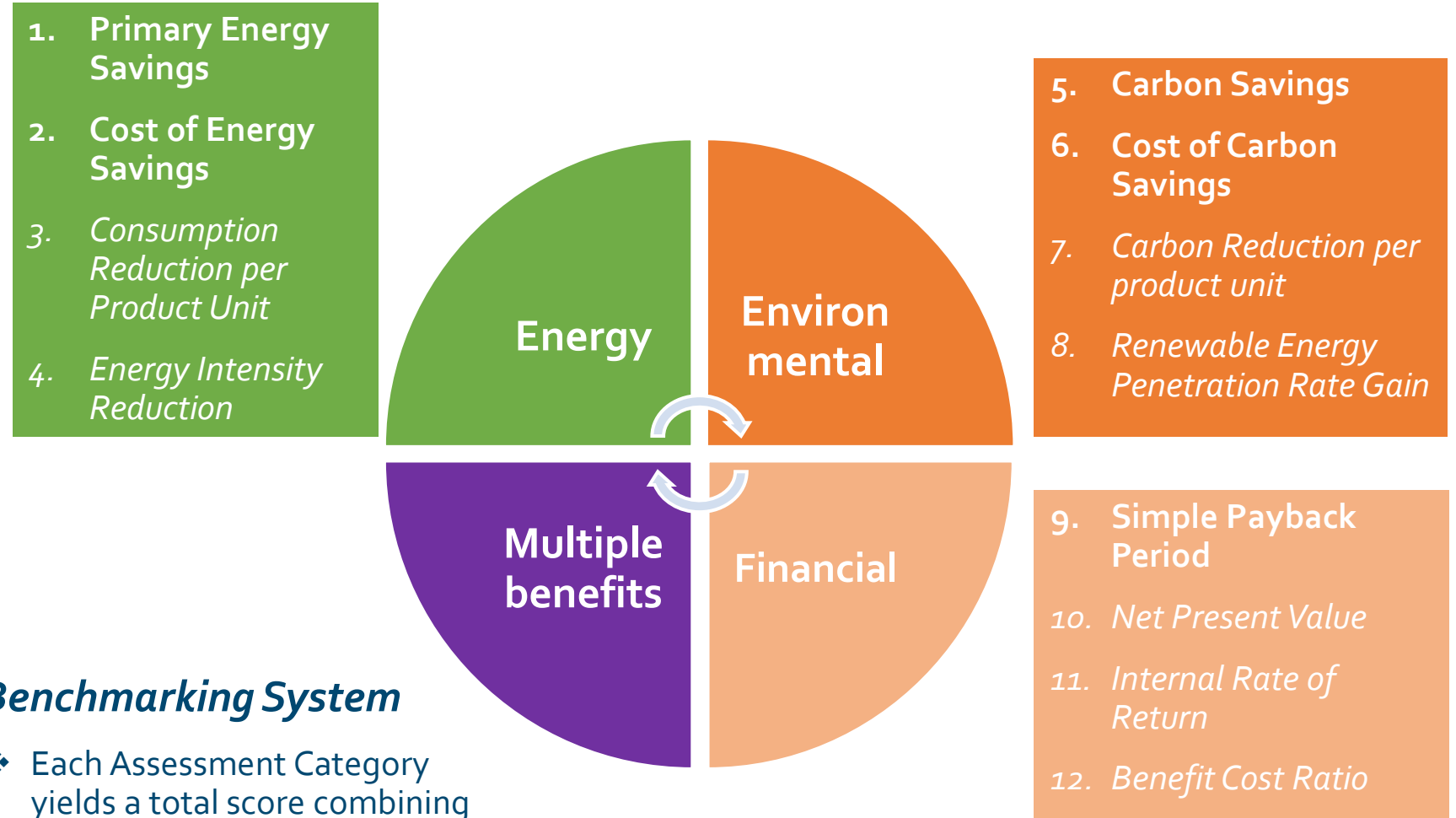


A2M Database: KPIs Calculation and Benchmarking System

Key findings

It would be useful to have common guidelines on data collection process:

- Information about the audited company regarding the size, industrial sector by NACE codification, turnover, etc.
- Information about the ESM, including its description, lifetime, reference year, status (either proposed and/or implemented), technology group.
- Information about the energy and carbon savings estimated by each energy auditor conducting the audit and proposing the measure.
- Information about the financial metrics utilised to techno-economically assess each ESM in the audit report



Benchmarking System

- ❖ Each Assessment Category yields a total score combining the respective KPI values (0-100).
- ❖ Each ESM yields a total score, combining the four assessment categories.

A2M Database

Detailed information

By clicking on each ESM, the user can observe detailed information's such as:

- Industrial Sector
- Technology Group
- Lifetime
- KPI Values including Non – Energy Benefits Assessment
- Scores on the 4 assessment pillars

ESM Filtering

User-Friendly Interface with easy-to-use filtering combinations

Quick Visual Representation of the benchmarking results

By clicking on each ESM, the user can view measure benchmarking results. These results are generated after the analysis of all the database ESMs

INDUSTRY

Pulp & Paper

Plastics

Pharmaceuticals

Metal

Machinery

TECHNOLOGY CATEGORY

Power Generation

Process Heating/Cooling

HVAC System

Compressed air

Lighting

COUNTRIES

Greece

Italy

Czech Republic

Spain

COMPANY SIZE

Micro

Small

Medium-sized

EXECUTIVE SHEETS

Yes

ESM Title:

Electric blankets employment

ESM Description:

Installation of insulating blankets on plastic injection molding machine

Industrial Sector:

Plastics

Technology Group:

Processes

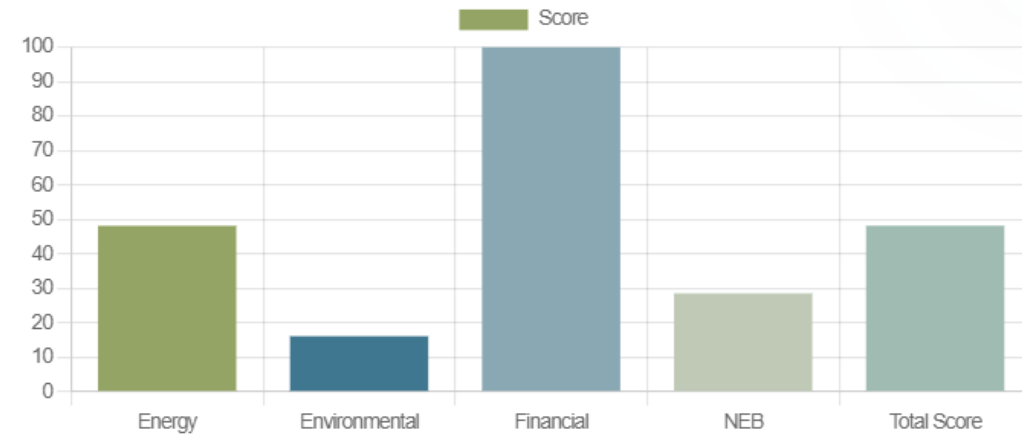
Country:

Italy

Status of Implementation:

Implemented

Esm Score per Assessment Pillar



A2M Energy Management Maturity Assessment

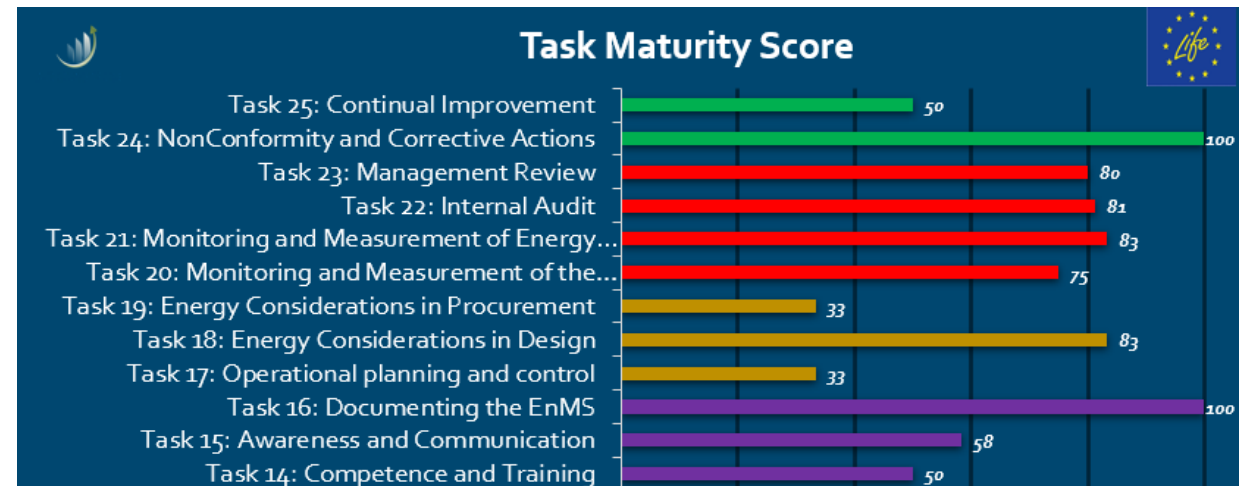
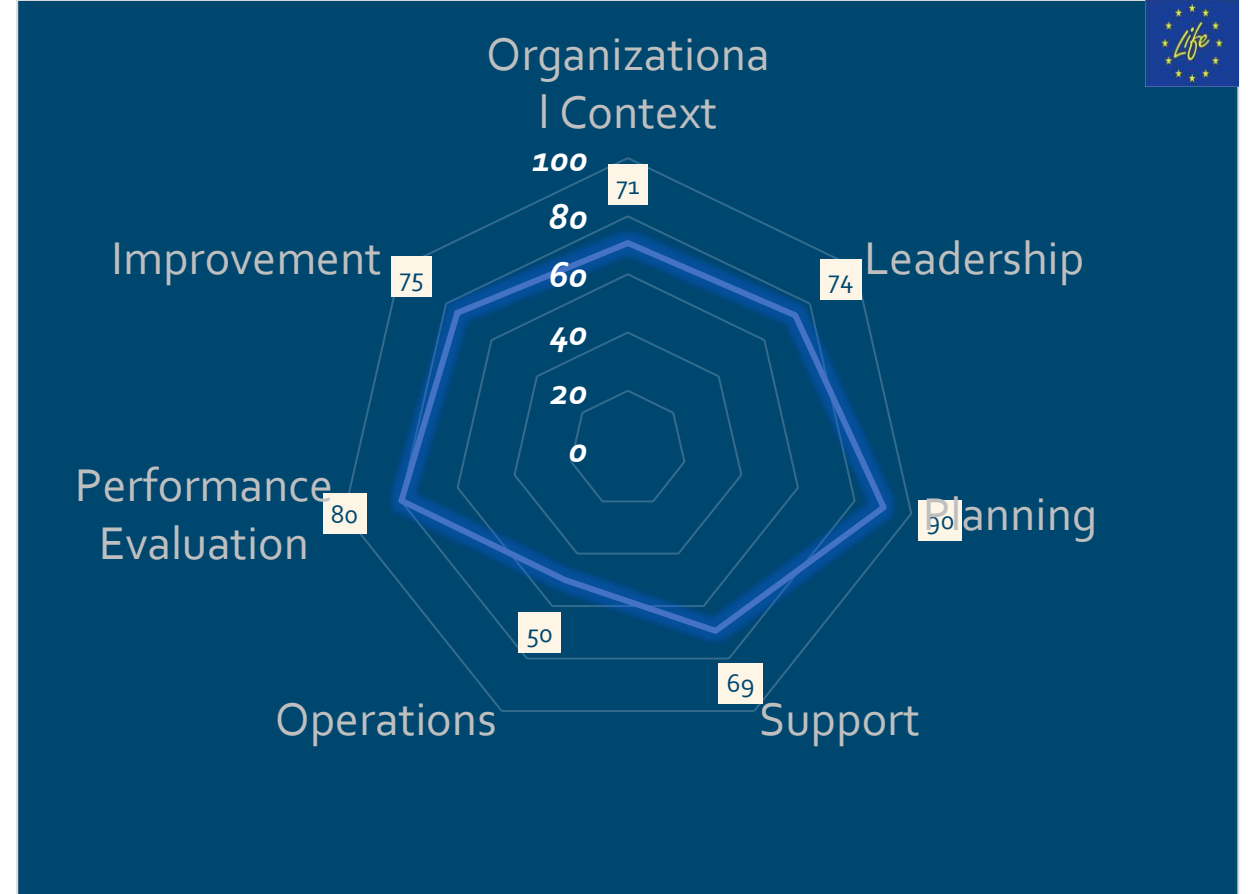
- ✓ Assist industrial organizations in **developing** or improving their energy management practices and understand how those practices have grown over **time**.
- ✓ Advice on building energy management business practices that are in accordance with the ISO50001 standard.

7 broad categories / ISO 50001 requirements of energy management activities are identified:

1. *Organizational context*
2. *Leadership*
3. *Planning*
4. *Support*
5. *Operations*
6. *Performance Evaluation*
7. *Improvement*

❖ 25 tasks with multiple subtasks that correspond to the standard's specific requirements

❖ Maturity Scores for each task and across 7 sections of the ISO50001 standard



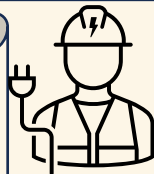
Capacity Building Programme

The Capacity Building Programme will lay the foundation of the in-field activities with the companies



Managerial Staff

- Definition of a clear strategy and plan of investments in relation to energy savings;
- Regulatory obligation related to ESM implementation
- Being informed of the latest trends, opportunities and good practices in energy-related aspects;



Operational Staff

- ESM and RES implementation and technical solution related to technology processes and their benefits in industrial processes.
- Monitoring and analyzing the energy consumption;
- Energy management system opportunities.



Industry Associations and other multipliers

- The latest trends, opportunities and good practices in energy-related aspects of business with specific focus on industry;
- The existing and expected regulatory obligation (EU, local) relating with relevant industry sector;
- How to facilitate the development of strategies and/or plans supporting the ESM implementation and general steps leading to implementation of that ESM

Policy recommendation report

This report will focus on the recommendations about implementation of energy efficiency measures in the business industries of the scope of the proposal.

The paper will be presented at the final conference of the AUDIT2MEASURE project in mid 2025.

For this event the European Commission, CINEA, other Agencies, European Standardization bodies and European Industry Associations will be invited.

This report would help to update some European regulations and normatives, for example the energy efficiency Directive EED

Conclusions and next steps

- The main aim of the AUDIT2MEASURE project is to support companies in the uptake of audits measures necessary to reduce the energy consumption supporting their energy transition;
- To this aim, AUDIT2MEASURE has developed a new engagement strategy (called “Audit2Action”) to put into action the opportunities emerging from energy audits;
- The next steps will be to implement the “Audit2Action” strategy in the field working with a series of companies, starting with the Capacity Building Program.



AUDIT2MEASURE

Thank you.

For more info, visit our website or contact us:



<https://ieecp.org/projects/audit-to-measure/>



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Call for Applications - Join the
AUDIT-TO-MEASURE Project!

