From Compliance to Impact: Evaluating Energy Efficiency Measures in Portugal and Italy

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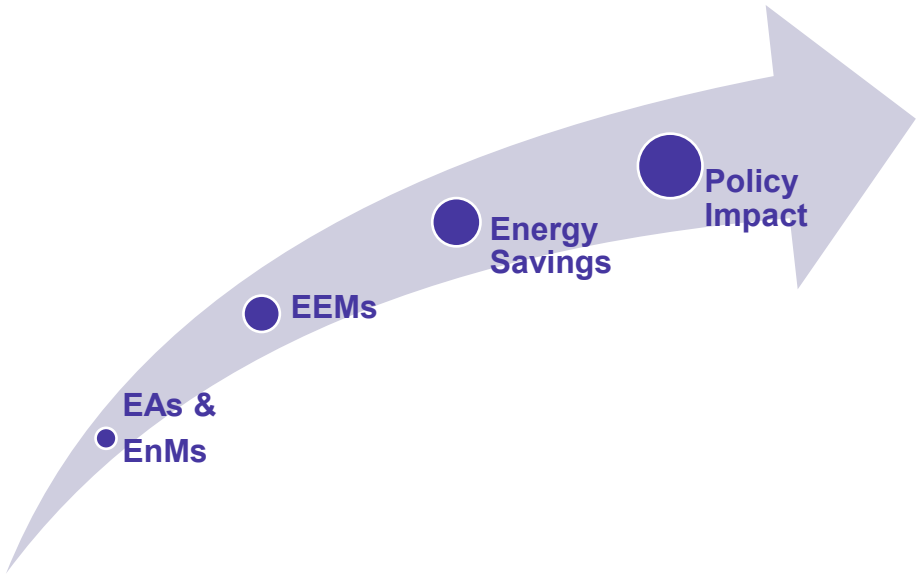
Introduction & Objectives



- ✓ **Energy Audits** (EAs) and **Energy Management Systems** (EnMS) are **key instruments** to improve energy efficiency and reduce GHG emissions in European companies.
- ✓ EU policies evolved from **EED 2012/27/EU** to **revised EED 2023/1791**, increasing obligations for energy-intensive enterprises and introducing **Action Plans**.
- ✓ Reliable data on **Energy Efficiency Measures (EEMs)** is essential for **compliance, policy evaluation, and informed company decisions**.

Introduction & Objectives

Objectives of this study

- ✓ **Compare how Italy and Portugal implement EAs and manage EEMs data**.
- ✓ Assess the **role of digital platforms** (Portale Audit 102 / SGCIE) in compliance and monitoring.
- ✓ Identify **good practices** that promote EEM adoption and policy impact.
- ✓ Provide insights for **transposing Art. 11 of the revised EED** into national frameworks.

Italy vs Portugal: Key Comparison

		
Main legislation	**DL 71/2008 (amended by DL 68-A/2015) SGCIE – Intensive Energy Consumption Management System**	**Leg. Decree 102/2014 and 73/2020**
Target entities	Industries consuming ≥500 toe/year; ≥1000 toe/year with stricter targets	Large enterprises; energy-intensive companies seeking incentive eligibility
Audit frequency	Every 8 years (moving to 4-year cycle)	Every 4 years
Exemptions	EnMS-certified companies exempt if not already under SGCIE	EnMS-certified companies exempt from EAs
Mandatory EEMs	PREn (Energy Consumption Rationalization Plan): Define targets: reduce energy intensity 6% (large) / 4% (smaller) Implement EEMs with payback time ≤3–5 years	Obligation for energy-intensive companies to implement at least one measure every 4 years (Leg. Decree 73/2020).
Digital platform	SGCIE portal	Audit 102 portal
Updates	Threshold lowered to 240 toe; 4-year audit cycle to align with EED 2023/1791	DL 131/2023 introduced separate voluntary “green conditionalities” linked to incentives and compliance paths

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Digital Tools: Italy vs Portugal

Portal	Italy – Portale Audit 102	Portugal – SGCIE Platform
Purpose	Standardize EA reporting, compliance	Monitor EAs, track PREn, implement EEMs
Support for companies	Energy Management Tool, Self-Assessment, Energy Maturity Questionnaire	PREn dashboards, Subsector Notebooks
Access to data	ENEA, policymakers	ADENE/DGEG, companies, public data
Sectoral analysis	Planned benchmarking, EnPI indicators	Subsector trend analysis included
Collected indicators	Investments, savings, PBT	Energy consumption, PBT, intensity, savings

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Quantitative Data: Italy & Portugal

2023 EEMs Data

Key Insights:

- **Italy:** High number of recommended EEMs → potential for future implementation
- **Portugal**: 80 new installations/year (1365 in Feb, 2025) 85% from industry
- Both: Variability in energy savings due to sectoral differences and type of interventions

	Italy	Portugal
Implemented EEMs	8,604	6,454
Recommended EEMs	25,017	6,454
Implementation rate	Not formally published; varies by sector	~100% per company
Data analysis	17 intervention areas; energy savings by payback class; regional & NACE sectors	Sector-specific, type-specific, monitored via PREn dashboards
Key drivers of variability	Company type mix, intervention type, technology maturity, financial incentives	Sectoral factors, type of intervention, consistency of PREn application

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Quantitative Data: Italy & Portugal

Energy & CO_2 Savings Comparison
Cumulative / 2019–2023 Highlights

Metric	Italy	Portugal
Total energy saved (toe)	Variable, peak 473.8 ktoe (2019)	235.000 toe cumulative (2008–2025)
CO_2 savings (tCO_2e)	Peak 60.766 (2021)	969.000
Payback periods	4–4.7 years	~4 years
Most common interventions	lighting, compressed air, production lines	waste heat recovery, motor optimization, thermal insulation
Implementation rate	34% approx (EEMs implemented / recommended)	~100% (PREn)

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Key Indicators from SGCIE Database

Period: 2019–2023

Implemented/recommended Energy Efficiency Measures (EEMs)

Final Energy Savings	Expressed in ktoe; reduction in actual consumption
Primary Energy Savings	ktoe saved upstream, accounting for energy production and transformation
Electricity vs Fuels	Disaggregated data by energy type – % share of savings
Cost-Effectiveness	€ / toe saved annually – average cost of energy savings
Payback Time (PBT)	Years to recover investment on EEMs
Carbon Emissions Reduction	Measured in tCO_2e saved annually

Use of the Data

- Enables **sectoral comparisons** and **monitoring of implementation trends**
- Supports **policy evaluation** and **identification of most effective EEMs**
- Allows businesses to assess **economic feasibility and ROI** of interventions

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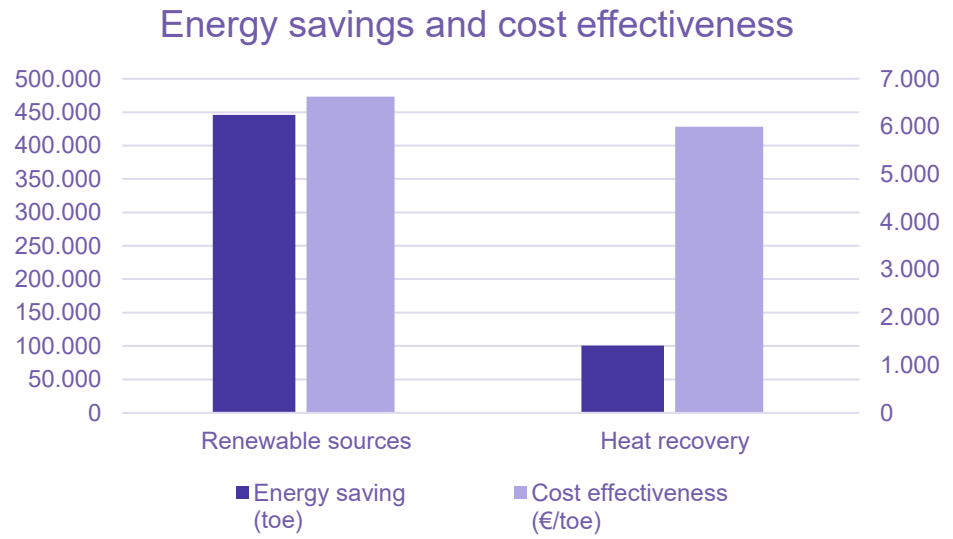
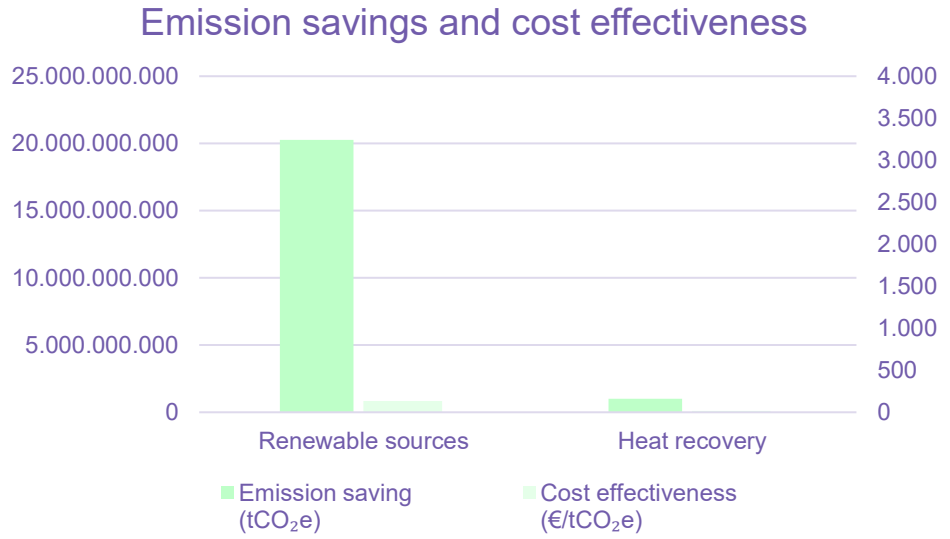
Key Indicators from SGCIE Database

Energy savings, emission savings and corresponding cost effectiveness for the two main areas of interventions carried out within the framework of the SGCIE (cumulative 2008–2025)





Key Indicators from Portale Audit 102

Period: 2019–2023

Implemented and Recommended Energy Efficiency Measures (EEMs)

Final Energy Savings	ktoe saved; not available for all years (methodology change in 2023)
Primary Energy Savings	ktoe saved upstream; available for all years
Electricity vs Fuels	Disaggregated % of energy type savings (especially for recommended EEMs)
Cost-Effectiveness	€ / toe saved; varies widely by year and intervention type
Payback Time (PBT)	yars to recover investment – data shows most EEMs below 5 years
Carbon Emissions Reduction	Not directly reported, but inferred from energy savings and intervention type

Use of the Data

- Tracks **implementation gaps** (recommended vs implemented EEMs)
- Helps **identify quick-return measures** and **priority intervention areas**
- **Supports policy updates and regional benchmarking**

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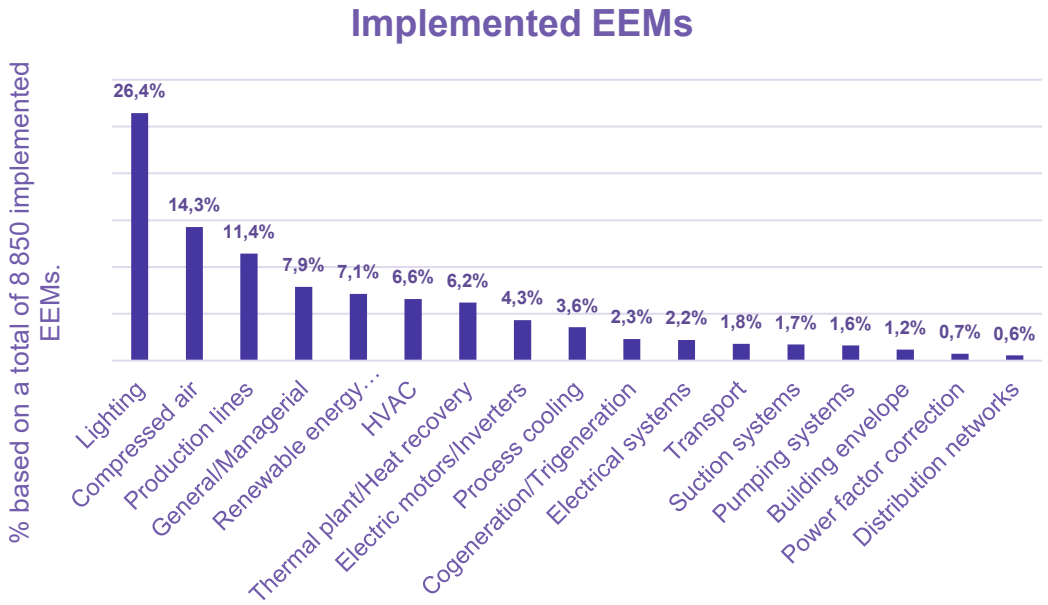
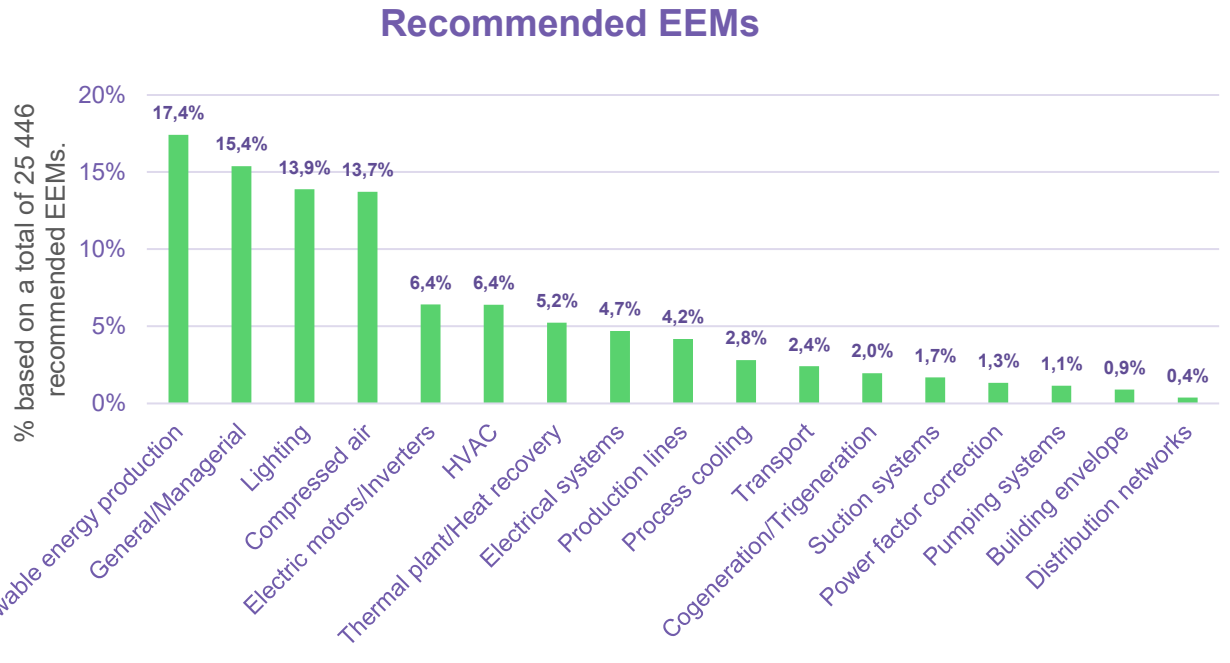
Key Indicators from from Portale Audit 102

Percentage distribution of recommended and implemented EEMs by intervention area in Italy under EED Art. 8 (Source: Portale Audit 102 Database 2023)





Supportive actions to foster EEMs implementation

		
Digital Tools & Data Use	National Portal “Audit 102” with EEM tools and EA submission platform	SGCIE database – structured and mandatory EEM tracking, PREn development and monitoring
Use of Data to Inform Companies	Data from audits used to create sectoral tools and indicators	Systematic use of audit data to design targeted support tools and regulatory priorities
Sectoral Guidance and capacity building	***Quaderni dell’Efficienza Energetica*** **–** sector-specific manuals with KPIs, benchmarks, and real EEMs National ***EE Awareness Plan*** **for SMEs** with workshops, training, and dissemination of guides and tools	***Cadernos Sectoriais*** **– based on SGCIE data**, show sector benchmarks, best practices and payback periods

Conclusions

Data-driven EE governance:

- ✓ Italy & Portugal show **structured data collection** from EAs and EEMs.
- ✓ Digital platforms enable **systematic monitoring, benchmarking, and analysis**.

Key insights:

- ✓ Collecting detailed energy and EEM data is **essential for policy evaluation**.
- ✓ Data allows **identification of best practices** and supports evidence-based decision-making.
- ✓ Enables adaptation of policies to **sectoral trends, technological maturity, and economic conditions**.

Future directions:

- ✓ Enhance platforms for **real-time monitoring** and integration with **new data sources** (smart metering, ESG reporting).
- ✓ Use data to **refine regulations**, optimize incentives, and align with **Art. 11 EED** goals.

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Thank you for your attention

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