

Bridging Gaps in Energy Efficiency Policy: Aligning Stakeholder Needs with Practical Resources

Authors: Eirini Vasilakou, Danai Sofia Exintaveloni, Alexandros Flamos

Technoeconomics of Energy Systems Laboratory (TEESlab)
Dept. of Industrial Management & Technology, University of Piraeus (UNIPi)
University of Piraeus Research Center (UPRC)

Paper session 3 – Climate & policy strategies

Friday, 10 October 2025

With the contribution of the Green Fund.



Table of Contents

	01	Introduction and the ENSMOV Plus project
The Objectives of the study	02	
	03	Methodology Step 1: Needs Assessment Survey
Methodology Step 2: Updating and Expanding the Compendium	04	
	05	Methodology Step 3: Matching Needs with Resources
Identifying Gaps	06	
	07	ENSMOV Plus Responses to Gaps
Conclusions & Final Remarks	08	

The EED- Then and Now

- **Originally adopted** in 2012 (Directive 2012/27/EU), the EED established mandatory frameworks for EU Member States to reduce energy consumption.
- **The recast EED** ((EU) 2023/1791), in force since Oct 2023, raises the bar for Member States' annual energy savings.
 - **Article 8** (formerly Article 7) requires all MS to deliver **progressively increasing** annual savings:
 - ✓ **1.3%** in 2024–2025
 - ✓ **1.5%** in 2026–2027
 - ✓ **1.9%** from 2028 onward



What This Means for MS

- Must implement or adapt robust **Energy Efficiency Obligation Schemes** (EEOS) and/or **Alternative Measures**.
- Required to:
 - ✗ Exclude **fossil-fuel** based savings from 2026. (Annex V)
 - 🎯 Target a portion of savings toward vulnerable groups (**energy poverty ringfence**).
 - 📊 Ensure strong Monitoring, Verification & Reporting (M&V) systems per Annex V.

Compliance affects not only national targets, but contributions to **EU-wide climate goals** (Fit for 55 / 2030).



*In practice, many public authorities and stakeholders face challenges in accessing or applying the tools needed to fulfil these requirements. That's where **ENSMOV Plus** comes in.*

Duration: December 2022- November 2025

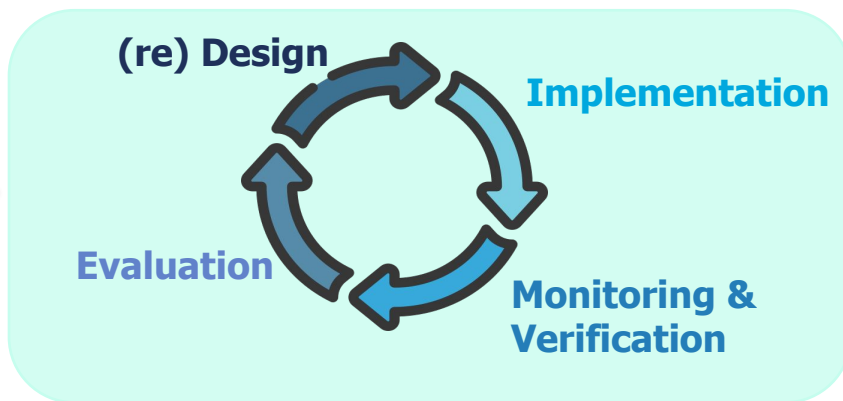
Project name: **E**valuation, Qua**N**tification and **S**trengthening of the **I**mplementation of the **P**olicies and EM&**V** under Article 7 (now 8) of the EED

ENSMOV Plus supports Member States by:

- ✓ Facilitating **policy knowledge exchange between peers**
- ✓ Strengthening M&V systems and evaluations
- ✓ Providing **tools, resources**, and real-world **policy support**



The policy Cycle



Outputs....

Two **modelling tasks**
(Quantification scenarios & Policy Analysis)

Tailored resources – e.g. the **Country Snapshots**, the **Compendium** of resources

Knowledge exchange activities and the online platform

14 partners:

- ❖ Public authorities, agencies and institutes
- ❖ National associations of stakeholders
- ❖ Research labs/think tanks

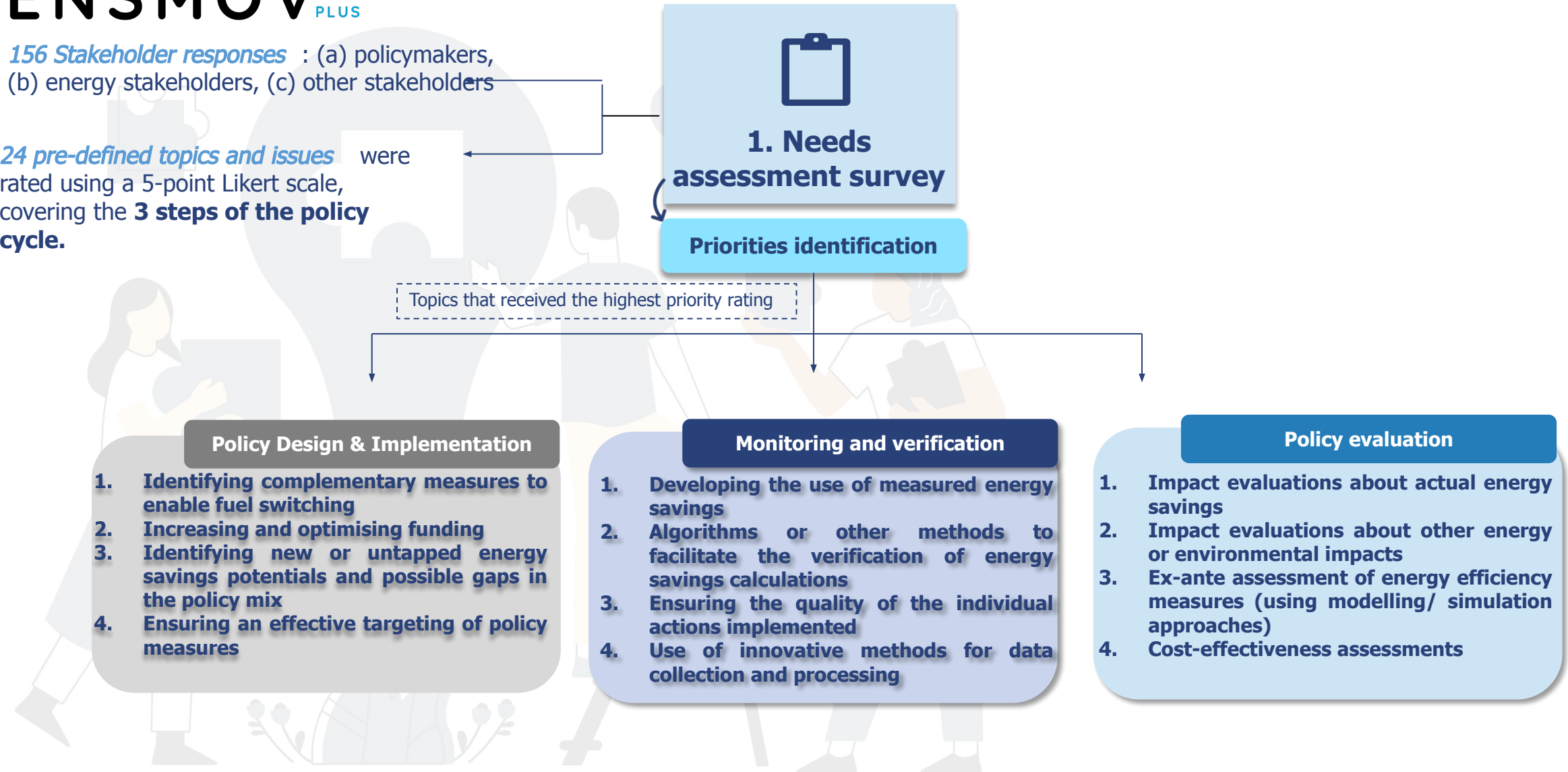


The aim of the study is to:

- ✓ Develop a comprehensive, **Excel-based Compendium of Resources** that:
 - **Maps existing tools** and references across the full policy cycle.
 - Makes **resources easily searchable** by sector, audience, and policy step.
 - **Supports** policymakers and stakeholders in finding practical solutions for Article 8 implementation.
- ✓ Identify **critical gaps** in design, monitoring & verification, and evaluation, and **highlight ENSMOV Plus activities** (snapshots, modelling, knowledge exchange) that were developed to **directly respond** to these unmet needs.

156 Stakeholder responses : (a) policymakers,
(b) energy stakeholders, (c) other stakeholders

24 pre-defined topics and issues were
rated using a 5-point Likert scale,
covering the **3 steps of the policy
cycle**.



Process:

- Removed outdated/broken resources.
- **New** user-friendly **template** created.
- Organised **by policy cycle**:
 - ✓ Policy design & implementation
 - ✓ Monitoring & Verification (M&V)
 - ✓ Policy evaluation
- Added structured info: **audience, sector, type, keywords.**



2. Update & Desk Research

Update of previous compendium (ENSMOV H2020)

Desk-based research (ENSMOV Plus)

Integrated old & new resources.

Expanded & structured inventory.

**New ENSMOV Plus
Compendium of Resources
Excel Tool**

Process:

- ❖ Focused on priority needs from survey.
- ❖ Identified EU, national, and international tools/resources.
- ❖ **Types:** reports, guidelines, databases, webinars, academic studies.

Criteria used for the categorization of the resources

3. Matching Resources to identified Needs

Process:

- ✓ Matched all collected resources with the highest-priority needs (4 per policy cycle step).
- ✓ Considered resources at all levels (EU, national, international).
- ✓ Some resources **address multiple needs** due to complementarities.

Resource/Tool name	Target Audience				End-use sector					Geographic Area			Policy Topic		
	Policy makers	Energy stakeholders	Other stakeholders	Academic community	Residential	Services	Industry	Transport	Other	National Level	EU level	International	Policy design & implementation	Monitoring & verification	Policy evaluation
Identifying complementary measures to enable fuel switching															
Fuel switching as an option for medium-term emission reduction - A model-based analysis of reactions to price signals and regulatory action in German industry	x	x	x	x			x			x			x		
State Policies and Rules to Enable Beneficial Electrification in Buildings through Fuel Switching	x				x							x	x		
Beneficial Electrification	x				x	x		x				x	x		
Decarbonisation Policies in the Residential Sector and Energy Poverty: Mitigation Strategies and Impacts in Central and Southern Eastern	x			x	x						x		x		
Member States' ambition to phase out fossil-fuel heating -an analysis	x			x	x						x		x		
Increasing and optimising funding															
REGULATION (EU) 2023/955 of the European Parliament and of the Council	x				x	x	x	x			x		x		
InvestEU Fund	x	x	x		x	x	x	x			x		x		
European Energy Efficiency Fund	x	x	x		x	x	x	x			x		x		
Energy Efficiency Financing	x	x	x		x	x	x	x			x		x		
The Energy Policy Tracker	x			x	x	x	x	x				x	x		
Investment decision-making optimisation of energy efficiency retrofit measures in multiple buildings under financing budgetary restraint	x			x	x							x	x		
Effective energy saving policy requires causal evidence	x			x	x			x							x
Impact evaluation about other energy or environmental impacts															
MB:EE Multiple Benefits of Energy Efficiency tool	x			x	x	x	x	x							x
Multiple Impacts Calculation Tool (MICAT)	x	x	x	x				x		x					x

Member States' ambition to phase out fossil-fuel heating -an analysis	
Author (Date)	Jonathan Vavre and Mélissa Zill (2021)
Description	This report provides a comprehensive overview of the fossil fuel phase-out measures implemented by Member States. The main national initiatives of each Member State together with extensive analyses are available.
Target Audience	Policy makers, Academic community
Geographic Area	EU level
Type of tool	Report/ guideline
Policy topic	Policy design & implementation
End-use sector	Residential
Tags	Alternatives to fossil fuel technologies
Link/Source	https://www.coolproducts.eu/wp-content/uploads/2021/07/ECOS-Coolproducts-Background-Briefing-MS-ambition-to-phase-out-fossil-fuel-heating.pdf

Clear mapping of *needs* ↔ *resources*, showing where stakeholders can find relevant tools.

67 resources identified in total across the policy cycle

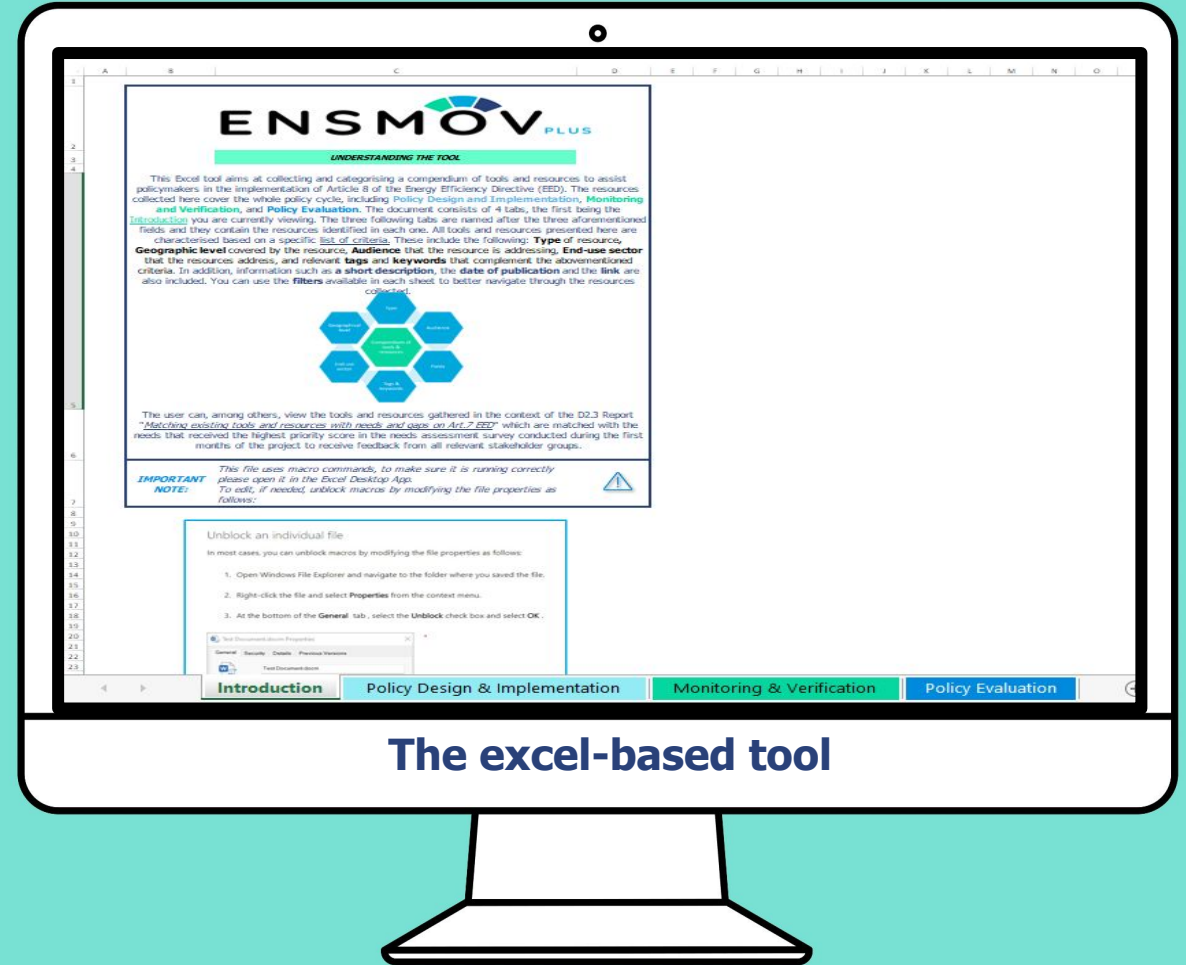
29 resources
addressing Policy
Design and
Implementation

18 resources
addressing
Monitoring and
Verification
processes

20 resources
addressing Policy
Evaluation



Compiled into the ENSMOV Plus Compendium (Excel tool)



67 resources identified in total across the policy cycle

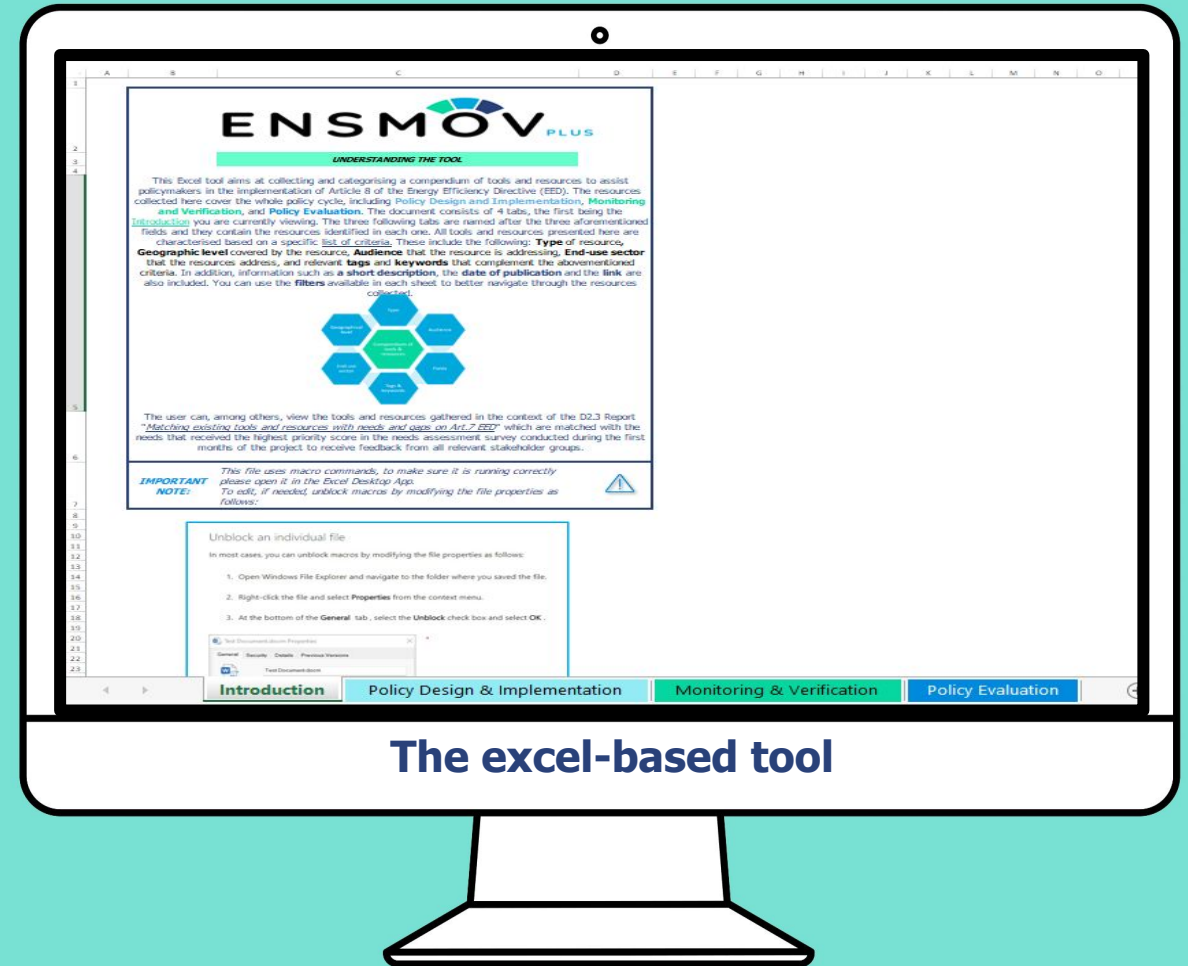
29 resources
addressing Policy
Design and
Implementation

18 resources
addressing
Monitoring and
Verification
processes

20 resources
addressing Policy
Evaluation



Compiled into the ENSMOV Plus Compendium (Excel tool)



Policy design & Implementation

- Few resources on targeting vulnerable / priority groups.
- Studies on savings potentials often lack specificity for Article 8.
- Limited support on overcoming investment barriers beyond buildings.

Monitoring & Verification

- Lack of resources on algorithms for verifying energy savings.
- Limited innovative methods for data collection/processing.
- Few best practices on quality assurance outside the building sector.

Policy Evaluation

- Cost-effectiveness resources focused mostly on buildings.
- Limited evaluations of behavioural measures.
- Need for broader multi-benefit assessment guidance.

These gaps directly guided **ENSMOV Plus** to develop complementary resources.

Policy design & Implementation

- Few resources on targeting vulnerable / priority groups.
- Studies on savings potentials often lack **specificity for Article 8**.



The ENSMOV Plus Country Snapshots

- Include **key features**: scope, obligated parties, monitoring & verification, controls.
- Complemented with **expert interviews** → direct insights on design challenges & lessons learned.
- Enable experience sharing among Member States on **effective scheme design and targeting**.

ENSMOV Plus webinars and Publications

Bridging Energy Savings Obligations and Social Climate Plans: Tackling Energy Poverty and Consumer Vulnerability in Member States

April 9, 2025 14:00 - 15:30

Regional workshop: Experience sharing about Member States' energy savings obligation and tackling energy poverty

TRATALOW stands for Transition towards low emissions and climate-resilient economy in the Western Balkans and for the implementation of the EU climate package. This week's TRATALOW workshop once the National Energy and Climate monitoring and evaluation were some discussions. Jean-Sébastien Broc presented the energy savings obligation (Article 8 of the Directive). The figure about the various 2020 raised questions about what makes

Ensmov Plus

Monitoring, Reporting and Verification

Energy Efficiency Obligation Schemes

Energy poverty and social aspects

Case Study

Examples about targeting priority groups and tackling energy poverty

The new Energy Efficiency Directive (EU) 2023/1791, entered into force in October 2023, has introduced in its Article 8(3) a new requirement for Member States to achieve at least a minimum share of the energy savings among priority groups (e.g. energy poor or low-income households, vulnerable customers, social housing tenants). In this new set of examples, we looked at how energy efficiency schemes reported as contributing to alleviating energy poverty define their priority groups, how obligated parties need to demonstrate the eligibility of the beneficiaries (in case of Energy Efficiency Obligation Schemes) and how the results related to alleviating energy [...]

Ensmov Plus

Monitoring, Reporting and Verification

Policy design and implementation

Energy poverty and social aspects

France

Ireland

Slovenia

Monitoring & Verification

- Lack of resources on algorithms for verifying energy savings.
- Limited innovative methods for data collection/processing.
- Few best practices on quality assurance outside the building sector.

Measurement in monitoring energy efficiency policies, workshop recording and materials

ENSMOV Plus' latest workshop gave some insights into measurement in monitoring energy efficiency policies! The workshop had presentations and discussions based on the overview of the examples analysed in ENSMOV Plus, which included presentations from Croatia, France, Germany, Ireland and Italy! Go through the recordings and presentations: More about ENSMOV Plus here. Follow the project on LinkedIn and Twitter (X).

Ensmov Plus

Monitoring, Reporting and Verification

Energy Efficiency Obligation Schemes

Measurement methods

Croatia Germany Ireland Italy

Croatia Germany Ireland Italy

Measurement methods

Measurement methods

✓ Brought together practitioners from across Europe.

✓ Discussed **practical barriers and solutions** in applying measurement methods.

✓ Shared **lessons from national schemes** & explored transferability.

Workshop Materials: Monitoring & Verification in Industry: Sharing experiences between Italy and France

Energy efficiency projects in industry are often larger and more specific than for buildings. Therefore, measurements are often required for their monitoring and verification (M&V), especially in the framework of Energy Efficiency Obligation Schemes (EEOS) and white certificates schemes. Measurements can help improve the reliability of energy savings data. This is important to know the actual impacts of the schemes, and also to build trust among market players. This can then support the development of energy services. Meanwhile, if M&V requirements become too complex, they can create barriers to the implementation of new projects. This ENSMOV Plus workshop shared the [...]

Ensmov Plus

Monitoring, Reporting and Verification

Industry

Measurement methods

Verification of energy savings

France Italy

Using Measurements in Monitoring Energy Efficiency Policies (ENSMOV Plus case study)

- 5 **country examples** (Croatia, France, Germany, Ireland, Italy) showing how metered energy savings are applied in practice.
- Each case includes:
 - ❑ **Policy background** (scheme & rationale for using measurement).
 - ❑ **Technical aspects** (measurement process, calculation methods).
 - ❑ **Experience** (lessons learned, challenges, good practices).
- **Format:** concise fact-sheets (4–5 pages each).

Focus: How to monitor and verify energy savings in the industrial sector — an area with few publicly available tools.

Case experiences shared:

- **Italy:** approaches under the White Certificates scheme.
- **France:** methodologies from their Energy Efficiency Obligation Scheme.

Policy Evaluation

- Cost-effectiveness resources focused mostly on buildings.
- Need for broader multi-benefit assessment guidance.

ENSMOV Plus: Modelling Exercises: Greece & Croatia



The Croatian App

Optimisation of an incentive scheme for single-family houses: €120M scheme targeting ~10,000 houses.

Model used to *optimise allocation of funds while maximising energy savings.*

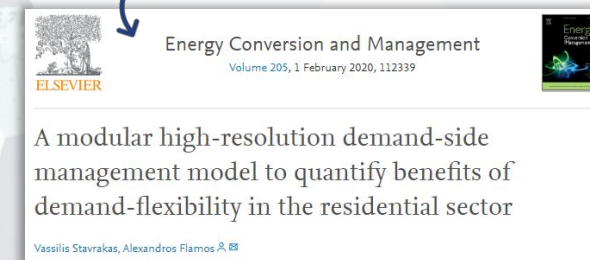


The Greek App

Renovation pathways to 2050: 12 building typologies (by construction period & climate zone).

Scenarios tested for renovation depth, heating system upgrades, heat pump integration.
Produced a *year-by-year roadmap* (2024–2050) for **meeting NECP targets.**

Tool used: TEESlab developed DREEM bottom-up modelling framework



Scientific basis of the DREEM model

Demonstrates how modelling can guide **ex-ante assessments, cost-effectiveness analysis, and long-term planning.**

Provides **practical examples Member States** can replicate or adapt.

ENSMOV Plus:

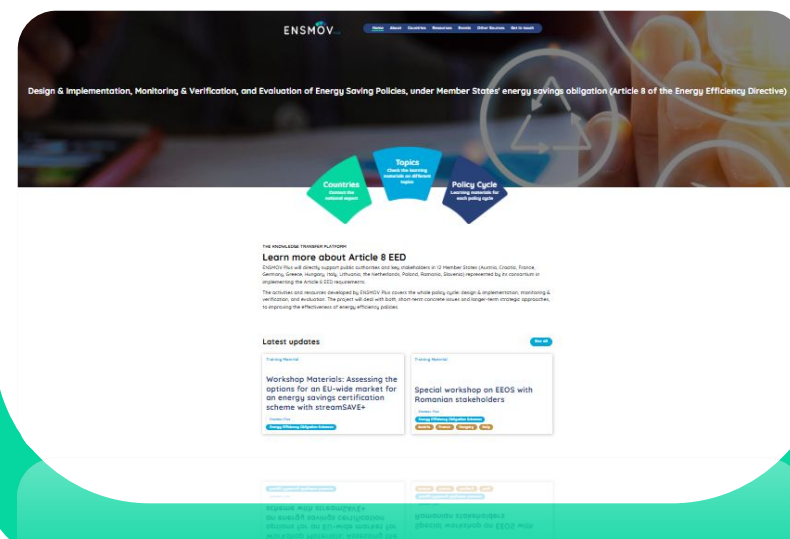
- ✓ **mapped stakeholder needs** against existing tools and created a structured, *Excel-based Compendium of Resources*.
- ✓ Identified critical **gaps** in design, monitoring, and evaluation that hinder effective Article 8 implementation.
- ✓ Developed **targeted outputs** to address these gaps:
 - ❖ **Country Snapshots** – lessons on design & targeting.
 - ❖ **Knowledge exchange workshops** – practical M&V examples.
 - ❖ **Modelling applications** – pathways and cost-effectiveness analysis.

Outputs provide practical, transferable resources Member States can adapt.



Remaining challenges: innovative data methods, algorithmic verification, quality assurance across sectors.

All of the project material, reports, resources, workshop proceedings and presentations are available on the **ENSMOV Plus Platform:**



Thank you for your attention!

Email us:

Contact:  vasilakou@unipi.gr
dexint@unipi.gr



ENSMOV Plus



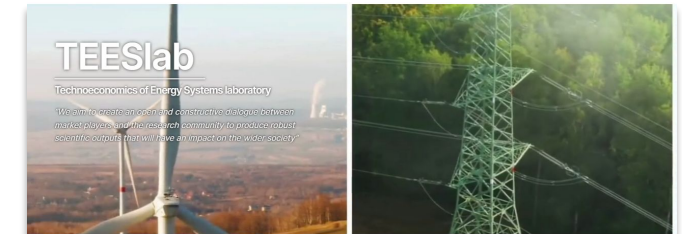
@ensmov / #ensmovplus



<https://ieecp.org/projects/ensmov-plus/>



Our Platform: energysavingpolicies.eu



Co-funded by the European Union under project n°101076098. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Commission or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

10/10/2025



ENSMOV Partners



Co-funded by the European Union under project n°101076098. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Commission or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

10/10/2025